

1 -- 67. The apparatus of claim 39, wherein the electrical property being screened for
2 is conductivity.

1 -- 68. The apparatus of claim 39, wherein the electrical property being screened for
2 is dielectric constant.

1 -- 69. The apparatus of claim 39, wherein the electrical property being screened for
2 is dielectric strength.

REMARKS

Applicants appreciate the after final interview granted by the Examiner on November 9, 1999 in this case and have amended this application in accord with the discussion with the Examiner during that interview as well as a review of the final rejection.

The pending claims are claims 1, 5-15, 24, 25, 39-57 and 62-69. Herein, claims 3, 4, 16-22, 26-38 and 58-61 have been cancelled due to the restriction requirement.

Claim 23 was cancelled to expedite prosecution. Claims 1, 39, 43 and 51 are the independent claims. Claims 62-69 were added as dependent claims on claim 39. Many of the claims have been amended as discussed herein, but the amendments to the claims are supported throughout the specification, and thus no new matter has been added (for example, see page 12, lines 22-24 for the amendment to claim 1).

Claim Structure And Amendments

Claims 1, 39, 43 and 51 are independent. Claim 1 now requires the simultaneous deposition of components onto the regions. Claim 39 is directed toward the screening of the materials that have been deposited onto the regions. Claim 43 has been amended to require both depositing and screening of materials that have been made through the deposition of the components onto the electrodes that comprise the spatially addressable array. Claim 51 is a claim more directed toward the details of one embodiment of the apparatus.

By action taken here, Applicants in no way intend to surrender any range of equivalents beyond that needed to patentably distinguish the claimed invention as a whole over the prior art. Applicants expressly reserve all such equivalents that may fall in the range between Applicants' literal claim recitations and combinations taught or suggested by the prior art.

Objection to Claim 23

Applicants do not agree with the Examiner's assertion that claim 23 does not further limit the claimed invention because an additional limitation is added to the way that components are deposited. However, in the interest of expedited prosecution for this case, Applicants have cancelled claim 23.

cancelled

Rejection of Claims 1, 5-15, 24, 25, 39-42, 44, and 45 Under 35 U.S.C. §112 ¶1

The Final Office Action rejected, inter alia, claims 1, 5-15, 24, 25, 39-42, 44, and 45 under 35 U.S.C. §112, first paragraph, as being new matter. Specifically, the Final Office Action stated that in the prior amendment (paper no. 10), Applicants introduced changes not supported by the disclosure as originally filed including:

- i) The recitation in claim 1 that the materials undergo chemical reaction at the predefined regions and that they can be "inorganic" compounds or "electro-polymerizable monomers."
- ii) The recitation in claim 44 that the electrodes are embedded within the substrate.
- iii) The recitation in claim 45 that the electrodes are disposed on a surface of the substrate.

Applicants submit that each of these limitations is fully supported by the specification, as filed. With respect to the first set of limitations, claim 43 recites that "the ions undergo chemical reaction at the predefined regions forming the array of materials" in which "all members of the array of materials are inorganic." Both limitations are disclosed in the specification. As discussed in the Background of the Invention, the present invention is generally concerned with combinatorial synthesis and screening of "inorganics, intermetallics, metal alloys, and ceramics." App. at page 3, lines 24-29 (emphasis added). Moreover, the specification provides numerous examples of the

preparation of inorganic arrays. Example 1, for instance, demonstrates how ions of copper, zinc, nickel, and iron are deposited on 16 platinum electrodes (predefined regions) disposed on a silicon dioxide substrate. App. at page 16, line 20 - page 17, line 11. Example 2 (group II-VI based phosphors), Example 3 (transition metal mixtures), and Example 5 (Sn-Ru-Pt alloys), also describe fabrication of inorganic arrays. Furthermore, in each of these examples, deposition occurs because metal ions are reduced—undergo a chemical reaction—at the surface of the platinum electrodes. This process is generally described on page 10, lines 18-21 of the specification: “Deposition and oxidation or reduction of the charged species from the fluid (or vapor stream) occurs onto those library elements [electrodes] with sufficient electrical potential to overcome the requisite oxidation or reduction potential (and associated overpotentials).”

With respect to the second and third sets of limitations, claims 44 and 45 recite that the electrodes are, respectively “embedded within” and “disposed on” the substrate. Both limitations are fully disclosed. For example, page 5, line 17 of the specification discloses that the “spatially varying electric potential may be applied to the substrate by an array of spatially addressable working electrodes coupled to or embedded within the substrate.” Furthermore, as noted above, Example 1 discloses that “an array of 16 platinum electrodes were fabricated on a silicon dioxide substrate.” App. at page 16, lines 22-23. See also Fig. 1 and 2, which show electrodes 105, 210 embedded within and on a substrate 110, 205.

Applicants respectfully request that this rejection be withdrawn.

Rejection of Claims 1, 5-15, 24, 25 and 39-57 Under 35 U.S.C. §112 ¶2

The following responds to the Examiner's § 112, second paragraph rejections in the Final Office Action.

Cancelled claims
With respect to claims 39 and 40, the term inorganic was not intended by Applicants to modify the term polymer and thus the claims have had these terms reversed to eliminate any possible confusion.

The term “different” is used in claims 1, 5-15, 24, 25, 39-42 and 43-47, generally to mean different in that the same component may be deposited in a different concentration, amount or thickness or that different components are deposited or tested. This is supported throughout the specification, but see specifically Figures 12-14 and the

associated text for those figures, which shows the same components being deposited in different amounts, concentrations and thicknesses as well as different components being deposited.

With regard to the statement in the Final Office Action, page 7, third paragraph, a source material may have more than one component (compare the definitions of component and source material in the specification at page 9). Thus, multiple components can come from one source material or from multiple source materials.

With regard to the phrase in claim 1 that states that "the components of the source materials" undergo a chemical reaction to deposit, it is respectfully pointed out that the claims require that more than one component deposit, but that there is "one or more source materials". Thus, the term "source materials" is plural in order to be proper English and the term "components" is plural because more than one component has to be deposited. Claim 1 has been amended to recite that at least two predefined regions are required, which should help to clarify the claim in this respect.

Claims 43-57 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. With respect to independent claims 43 and 51, the Examiner stated that the requirement that "at least two members of the array are different" is vague and indefinite because "it is unclear what applicants intend by different." As suggested by the Examiner in the Final Office Action, Applicants have amended claims 43 and 51 to recite that "at least two members of the array of materials have different compositions." This limitation is fully supported by the specification. For example, on page 10, lines 21-23 of the specification, Applicants note that, generally, by "changing the compositions of the ionic solutions (or vapor stream) and varying the relative voltages, regions of varying thickness and composition can be achieved over the entire library." In particular, Fig. 12 of Example 1 and Table I of Example 5 show arrays comprised of sixteen different compositions.

The Final Office Action also states that claim 46 recites that the substrate provides a substantially continuous potential between predefined regions. According to the office action, this limitation is vague and indefinite, "as it is unclear if this is intended to mean the potential is the same or if the potential varies substantially across the predefined regions." Applicants disagree that the claim is vague and indefinite because claim 46 recites that the substrate is a "resistive material," which prevents the electrical

potential from being the same across the substrate surface. However, to clarify the claim, Applicants have amended claim 46 to recite that the electrical potential "varies" between adjacent predefined regions. This limitation is fully described in the specification. See, for example, page 12, lines 25-30 and Fig. 5 and 6.

Rejections of Claims Under 35 U.S.C. §102/103

Of the claims currently pending, the Final Office Action rejected:

- a) claims 1, 9, 10, 12-15, 24, 25, 41-43, 47 and 50 under 35 U.S.C. §102(b) or (e) as being anticipated by Southern (WO 93/22480 or USP 5,667,667);
- b) claims 1, 5-15, 24, 25 and 39-42 under 35 U.S.C. §103 as obvious over Southern (above) in view of Hunter et al. (USP 5,641,391);
- c) claims 1, 5-13, 24, 25, 41, 42 and 50 under 35 U.S.C. §102(e) as being anticipated by, or in the alternative under 35 U.S.C. §103 as obvious over Hunter et al. (USP 5,641,391);
- d) claims 1, 5, 8-13, 15, 24, 25, 43-45, 48 and 50 under 35 U.S.C. §102(b) as being anticipated by Liu et al. (USP 4,988,412); and
- e) claims 39 and 40 under 35 U.S.C. §102(b) as being anticipated by Borrelli et al. (USP 4,070,565).

The Final Office Action did not reject claims 46, 49, and 51-57 based on prior art. Thus, in view of the Applicants response to the Section 112 concerns, Applicants request an early notice of allowance with respect to these claims.

The prior art rejections are discussed in toto with respect to the independent claims, as follows:

Independent Claim 1

Although patentable before the amendment, claim 1 has been amended to distinguish the prior art by the addition of the limitation that the deposition of materials be simultaneous and in different amounts. Hunter et al. does not apply for two reasons, because the reference does not teach or suggest simultaneous deposition of materials, but also because Hunter et al. does not teach the use of a substrate that has regions for depositing different materials. Thus, Hunter et al. does not apply to the claimed

invention. Southern and Lui do not apply to claim 1, even as un-amended herein, but the additional limitation also serves to distinguish these references.

In particular, the Final Office Action is incorrect in that Southern does not deposit components or materials onto electrodes that correspond to predefined regions of a substrate. In Southern, materials are deposited onto substrate 18, not onto electrodes 10 nor onto predefined regions at which chemical reactions occur. Instead, the electrodes are brought "adjacent" to the substrate so that the electrodes can cause a change in the solution that contains the ions (such as a change in pH), which is then patterned on the substrate. Southern is not performing what is claimed and does not suggest performing what is claimed.

The same is true for Lui et al. Moreover, Lui et al. does not teach or suggest an array of electrodes, and is thus even further afield than Southern.

In sum, neither Southern, Hunter et al. nor Lui et al. teach or suggest the simultaneous deposition of different amounts of components or materials at different regions (e.g., spatially addressable electrodes). Thus, the references are distinguished by the amendment and claim 1 and all of the claims dependent thereon are in allowable condition. Applicants request that the Examiner withdraw the rejections pending with respect to claim 1.

Independent Claim 43

Claim 43 has been amended to require both the deposition and screening of materials deposited onto substrate having an array of electrodes, but without the requirement of simultaneous deposition of components or materials (as in claim 1). Since neither Southern, Hunter et al. or Lui et al. teaches the screening component (as recognized by the Examiner in the Final Office Action), Applicants believe that Claim 43 and the claims dependent thereon are allowable.

Independent Claim 39

Claim 39 has been amended to overcome the Examiner's Section 112, second paragraph rejection and to add an otherwise implicit limitation into the claim. The amendments to claim 39 are not due to prior art, but for the sake of clarity, since none of the prior art teaches or suggests these claimed inventions.

Claim 39 was rejected in view of Borrelli in the Final Office Action. This rejection is traversed on the grounds that Borrelli does not teach or suggest screening for an electrical property an array with a plurality of materials at predefined regions of the array. The Examiner refers to logic elements that form the array of materials, but there is no indication that the logic elements are different materials. More particularly, Borrelli does not screen materials that are different from each other for an electrical property. In fact, Borrelli is a circuit tester that has virtually nothing to do with the claimed invention. Applicants believe that this rejection should be withdrawn.

In conclusion, Applicants believe that this case is in condition for allowance and request an early favorable notice of allowability.

Respectfully submitted,



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